

REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated March 28, 2003. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 4-5, 8 and 9 are under consideration in this application. Claims 6-7 are being cancelled without prejudice or disclaimer. Claims 4-5 are being amended, as set forth above in the marked-up presentation of the claim amendments, in order to more particularly define and distinctly claim Applicants' invention. A new claim 9 is being added to recite other embodiment described in the specification.

Additional Amendments

The claims are being amended to correct formal errors and/or to better disclose or describe the features of the present invention as claimed. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Formality Rejections

Claims 6-7 have been rejected under 35 U.S.C. § 112, first paragraph, for being reciting new matter. The specification was rejected for the same reasons. The Examiner indicated that the language on page 9 only supports moving biochips but not moving the injecting head or and relative movement between the biochips and the injecting head. Claims 4-8 have been rejected under 35 U.S.C. § 112, second paragraph, for being indefinite.

As indicated, the corresponding claims have been cancelled or amended as required by the Examiner. Accordingly, the withdrawal of the outstanding formality rejection is in order, and is therefore respectfully solicited.

Prior Art Rejections

Claims 4-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,083,763 to Balch (hereinafter “Balch”) in view of U.S. Pat. No. 4,380,772 to Italiano (hereinafter “Italiano”). This rejection has been carefully considered, but is most respectfully traversed.

The process for producing at least one biochip of the invention, as now recited in claim 4, comprises: putting (1) a first solution containing and at least one biopolymer and Tris-HCl as a buffer (page 7, line 16) and (2) a second solution of liquid paraffin or mineral oil (page 7, lines 18-19) whose specific gravity is smaller than the gravity of the first solution so as not to mix with the first solution into an inkjet device; and ejecting the first solution from the inkjet device to a substrate to immobilize the biopolymer on a spot of a substrate of said biochip thereby producing the same.

Neither Balch nor Italiano teaches or suggests “using a first solution containing at least one biopolymer and Tris-HCl as a buffer and a second solution of liquid paraffin or mineral oil with a smaller specific gravity than the first solution” in an inkjet device for ejecting on a biochip thereby providing the same. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). “All words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). MPEP 2143.03.

The invention, as recited in claim 9, is also directed to a process for producing a biochip by spotting a biopolymer on a plate by using an inkjet apparatus comprising a tank containing a solution, a supply passage connected to the tank, and means for ejecting the solution from the tip of the supply passage, the method comprising: a first step of injecting into the tank and supply passage of the inkjet apparatus a biochip-producing solution comprising a first solution containing the biopolymer, a second solution which does not mix with the first solution and has a smaller specific gravity than that of the first solution, and a **third solution** (page 4, lines 28-29) which does not mix with the first solution and that has a larger specific gravity than that of the first solution to fill at least the supply passage (“*first the initial adjustment solution 10, then the DNA solution 6 and finally the buffer solution 7*” page 10, lines 18-20; Fig. 5); a second step of ejecting the third solution from the inkjet apparatus until the third solution is used up; a third step of ejecting the first solution from the inkjet apparatus such that the biopolymer is spotted at a predetermined location on the plate positioned below an ejection opening of the inkjet; and a

fourth step of delivering the plate on which the biopolymer was spotted and transporting the next plate below the ejection opening. The biopolymer is spotted on a plurality of plates by repeating the third and fourth steps.

“Specifically, the charging path 2 is filled with the solutions such that the initial adjustment solution 10 stays closer to the injection nozzle 4, the DNA solution 6 in the middle, and the buffer solution 7 on the top” (page 10, lines 13-16). *“Figure 5B is a schematic view showing an initial adjustment state which is performed until the injection operation by the inkjet device becomes stable. The solution is repeatedly injected until the amount of injection becomes stable”* (page 10, lines 23-26).

Neither Balch nor Italiano teaches or suggests using “a third solution (page 4, lines 28-29) which does not mix with the first solution and has a larger specific gravity than that of the first solution to fill at least the supply passage” connected to a tank for ejecting on a biochip thereby providing the same.

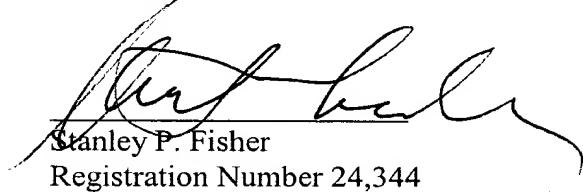
Accordingly, Applicants contend that the cited conflicting teachings of the prior art references would not motivate their combination such that their combination would embody each and every feature of the present invention as now claimed in claims 4 and 9 from which claims 5 and 8 depend. The difference is more than sufficient that the present invention as now claimed would not have been rendered obvious given the prior art. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art reference upon which the rejections in the Office Action rely, Applicants respectfully contend that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of

the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

Respectfully submitted,



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